

CLAIMS

1. A ball spline, characterized in that the ball spline comprises: a spline shaft having a plurality of lines of ball rolling faces extending in a longitudinal direction; and a spline nut formed substantially as a cylinder with a hollow hole into which the spline shaft is fitted, having on an inner peripheral surface of the hollow hole load rolling faces opposed to the ball rolling faces of the spline shaft, and being assembled to the spline shaft through the intermediation of a large number of balls, and in that:

the spline shaft has a substantially circular sectional configuration and has in its periphery a plurality of lines of longitudinally extending torque transmission grooves arranged at equal intervals, with the ball rolling faces being formed on side surfaces of land parts situated between the torque transmission grooves, that is, on both sides in the width direction of each torque transmission grooves; and

the distance between a pair of rows of balls rolling on the ball rolling faces situated on both sides of each of the land parts is set larger than the distance between a pair of rows of balls rolling on the ball rolling faces on both sides of each of the torque transmission grooves.

2. The ball spline according to Claim 1, characterized in that, regarding the pair of rows of balls rolling on the ball rolling

faces situated on both sides of each land part, the intersection of contact normals of the rows of balls with respect to the ball rolling faces is situated on the outer side of the line connecting the centers of these rows of balls with respect to the radial direction of the spline shaft.

3. The ball spline according to Claim 2, characterized in that:

the spline nut is equipped with an endless circulation path for causing the balls rolling on the load rolling faces; and

a pair of endless circulation paths situated on both sides of each torque transmission groove of the spline shaft cross each other so that one endless circulation path passes through the other endless circulation path.

4. The ball spline according to Claim 1, characterized in that the number of the torque transmission grooves is three.

5. The ball spline according to Claim 1, characterized in that the balls are arranged at predetermined intervals on a coupling belt.